is sufficient to shift ball **24** to the switch-open position illustrated in FIG. **2** in the absence of other magnetic effects such as that of operating magnet **18** discussed further herein. It will be appreciated that magnet **26** can take other shapes such as a rod, cylinder or ball or any other shape that would fit above the switch unit and serve to shift ball **24**.

In use, switch assembly **16** is installed in door frame **12** and operating magnet **18** is installed in door **14** as illustrated in FIGS. **1** and **2**. With door **14** closed, frame **12** and door **14** are in an adjacent position with operating magnet **18** aligned with switch assembly **16**. Magnet **18** presents sufficient field strength to shift ball **24** to the switch-closed position.

When door **14** is open, door frame **12** and door **14** are in a separated position and operating magnet **18** is no longer aligned with switch assembly **16**. This allows retraction magnet **26** to shift ball **24** to the switch-open position.

FIG. **2** also illustrates intruder magnet **46** positioned adjacent the side of switch assembly **16**. Placement of intruder magnet **46** as shown causes ball **24** to shift along contact surface **38** toward side wall **40** in the direction of intruder magnet **46**. This is also a switch-open position and simulates the opening of door **14**. Thus, the use of an intruder magnet results in an alarm condition because of the structure of switch assembly **16**. In this way, apparatus **10** defeats the use of an intruder magnet which has been a problem with the prior art.

FIG. **3** is a schematic illustration of the preferred alarm **48** system using preferred apparatus **10**. System **48** includes conventional alarm control **50** and an alarm output such as alarm bell **52**. Apparatus **10** is used in system **48** as a contact switch triggering alarm control **50** whenever apparatus **10** is in the switch-open position, unless system **48** has been disarmed.

Having thus disclosed the preferred embodiment of the present invention, the following is claimed as new and desired to be secured by Letters Patent:

1. A magnetic switch apparatus for detecting relative movement between first and second members, said apparatus comprising:

a switch assembly for mounting to the first member, said assembly including

a first switch element presenting a generally rod-shaped configuration,

a second switch element presenting a generally disc-shaped configuration and having a contact surface,

structure positioning said first switch element generally transverse to said contact surface and spaced therefrom,

a ferromagnetic body shiftable between a switch-open position in which said body is out of contact with both of said first and second elements and a switch-closed position in which said body is in electrical contact with both said element and said contact surface; and

a first magnet spaced from said contact surface and positioned for magnetically shifting said body to said switch-open position; and

a second magnet for mounting to the second member and positioned on an opposed side of said contact surface relative to said first switch element, said second magnet being magnetically sufficient for shifting said body to said switch-closed position when the members are in an adjacent position, and for allowing said first magnet to shift said body to said switch-open position when the members are separated.

2. The apparatus as set forth in claim **1**, said contact surface presenting a generally convex configuration relative to said first switch element.

3. The apparatus as set forth in claim **2**, said contact surface presenting a generally reversed conically shaped configuration.

4. The apparatus as set forth in claim **1**, said contact surface presenting a central axis with said first switch contact generally aligned with said axis.

5. The apparatus as set forth in claim **1**, said second switch element including a side wall circumscribing said contact surface as a bottom wall.

6. The apparatus as set forth in claim **5**, said second switch element being integrally formed of metal.

7. The apparatus as set forth in claim **6**, said switch assembly including an electrically insulating top wall spaced from said contact surface and circumscribed by said bottom wall to define a switching chamber containing said body.

8. The apparatus as set forth in claim **7**, said first switch element including an extended portion extending outwardly through said top wall.

9. The apparatus as set forth in claim **8**, said first magnet being ring-shaped and positioned adjacent said top wall and surrounding said extended portion.

10. The apparatus as set forth in claim **9**, said body presenting a generally spherical configuration.

11. The apparatus as set forth in claim **1**, said body presenting a generally spherical configuration.

12. The apparatus as set forth in claim **1**, said switch-open position being an electrically open switch position, said switch-closed position being an electrically closed switch position.

13. The apparatus as set forth in claim **1**, said switch elements being located so that said body shifts to a switch-open position when the members are in the adjacent position and when an external magnet is applied in the vicinity of the first member in an attempt to manipulate magnetically said apparatus.

14. A magnetic switch apparatus for detecting relative movement between first and second members, said apparatus comprising:

a switch assembly for mounting to the first member, said assembly including

a first switch element presenting a generally rod-shaped configuration,

a second switch element presenting a generally disc-shaped configuration and having a convex contact surface presenting a central axis

an electrically insulating top wall spaced from said contact surface, centrally receiving an extension portion of said first switch element therethrough, and positioning said first switch element generally aligned with said axis of said contact surface and spaced therefrom,

a ferromagnetic ball shiftable between a switch-open position in which said body is out of contact with both of said elements and a switch-closed position in which said body is in electrical contact with both said element and said contact surface, said switch-open position being an electrically open switch position, said switch-closed position being an electrically closed switch position, and

a ring-shaped, first magnet surrounding said extension portion and positioned for magnetically shifting said body to said switch-open position; and

a second magnet for mounting to the second member and positioned on an opposed side of said contact surface relative to said first switch element, said second magnet being sufficient magnetically for shifting said body to said switch-closed position when the members are in an

adjacent position, and for allowing said first magnet to shift said body to said switch-open position when the members are separated.

15. An alarm system for activating an alarm upon shifting of first and second members from an adjacent position to a separated position and upon attempted manipulation by an external magnet of the alarm system when the members are in the adjacent position, said system comprising:

a switch apparatus; and

an alarm control coupled with said switch apparatus and responsive to a change in state thereof for activating an alarm, said switch apparatus including

a switch assembly for mounting to the first member, said assembly including

a first switch element presenting a generally rod-shaped configuration,

a second switch element presenting a generally disc-shaped configuration and having a contact surface,

structure positioning said first switch element generally transverse to said contact surface and spaced therefrom,

a ferromagnetic body shiftable between a switch-open position in which said body is out of contact with both of said elements and a switch-closed position in which said body is in electrical contact with both said element and said contact surface,

a first magnet spaced from said contact surface and positioned for magnetically shifting said body to said switch-open position,

a second magnet for mounting to the second member and positioned on an opposed side of said contact surface relative to said first switch element, said second magnet being sufficient magnetically for shifting said body to said switch-closed position when the members are in an adjacent position, and for allowing said first magnet to shift said body to said switch-open position when the members are separated,

said switch elements being located so that said body shifts to a switch-open position when the members are in the adjacent position and when an external magnet is applied in the vicinity of the first member in an attempt to manipulate magnetically said apparatus.

* * * * *

16. A method of detecting the relative movement between first and second members from a close position where the members are adjacent, and an open position where the members are separated, said method comprising the steps of:

installing a switch assembly on said first member, said switch assembly including a first elongated switch element, a second switch element disposed in spaced relationship to the first element and a ferromagnetic body located adjacent the first and second switch elements;

when said members are in said close position, using a magnetic field of sufficient strength to shift said ferromagnetic body in a switch-closed orientation in simultaneous contact with said first and second switch elements;

in response to relative movement of the members from said close to said open position, magnetically shifting said ferromagnetic body to a switch-open orientation out of contact with said second switch element; and

using an alarm control to generate a signal when said ferromagnetic body is shifted.

17. The method of claim 16, including the further step of using a magnet located in said second member to provide said magnetic field of sufficient strength.

18. The method of claim 16, said first switch element being in a generally upright orientation, with said second switch element spaced below the first switch element, said maintaining step comprising the step of maintaining the ferromagnetic body in a lower switch-closed orientation, said magnetic shifting step comprising the step of shifting the ferromagnetic body upwardly to said switch-open orientation.

19. The method of claim 18, including the step of shifting said body upwardly using a retraction magnet located above said first element.

20. The method of claim 16, said first switch element comprising an elongated, rod-like member.

21. The method of claim 16, said second switch element being generally disc-shaped.

22. The method of claim 16, said body being spherical in shape.

23. A magnetic switch apparatus for detecting relative movement between first and second members from a close position where the members are adjacent, and an open position where the members are separated, said apparatus comprising a switch assembly for mounting to the first member, including a first, elongated switch element, a second switch element in spaced relationship to said first switch element, and a magnet assembly including a ferromagnetic body adjacent said first and second switch elements, said assembly operable to shift said ferromagnetic body in a switch-closed orientation in simultaneous contact with said first and second switch elements when said members are in said close position, and to shift said ferromagnetic body to a switch-open orientation out of contact with said second switch element in response to relative movement of the members to said open position.

24. The apparatus of claim 23, said body being spherical.

25. The apparatus of claim 23, said first switch element being generally rod-shaped in configuration.

26. The apparatus of claim 23, said second switch element being generally disc-shaped.

27. The apparatus of claim 26, said second switch element including a contact surface presenting a generally reversed conically shaped configuration.

28. The apparatus of claim 23, said magnet assembly further including a first magnet disposed above said first contact, and a second magnet for mounting to the second member.

29. The apparatus of claim 23, said first switch element being in a generally upright orientation, with said second switch element disposed below the first switch element.